

White Paper Report

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Vwire: Digital Content Management Through Spatial Arrangement
– a Tool for Visual Argumentation in the Humanities.

White Paper
NEH Digital Humanities Start-up Grant
HD5140011

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Pragmatic Overview (What we did):

In many ways, and in spite of difficulties discussed in the main narrative, the project was not only successful in meeting its initial goals, but also allowed for both conceptual and technical infrastructure to be built that will serve for further development of Vwire as a tool available to others and as a platform for the analysis of visual culture here at the University of Houston.

The programming team, led by Price, created a prototype that was ready for the main survey and interview stage, but devoted significant time to addressing user interface and basic functionality issues with that prototype and then implemented a more stable and ambitious tool, integrating with more content types, database management tools and numerical analysis modules. That stable version is just now being tested, and the decision to add functionality caused the product to be delayed significantly, albeit at no extra cost to the NEH.

As outlined in the grant, the ethnographic team (Koontz, Crowder and Price) conducted two rounds of interviews with ten art history and archaeology collaborators, each of whom considered 19 images of putative Teotihuacan masks and spoke to the ways in which formal analysis and visual argumentation could arise independently of conceptual frames. Teotihuacan culture – at its height controlling much of modern day Mexico – used masks that are notably different from other periods and cultures, but little is known about them on their own terms and speculation within the secondary literature is quite diverse (see Pasztory, E., 1993. *Teotihuacan Unmasked: A View through Art*. In K. Berrin & E. Pasztory, eds. *Teotihuacan: Art from the City of the Gods*. New York: Thames and Hudson, pp. 44–63).

We conducted two sets of interviews, and were able to identify systematic differences between groups as they approach the masks. This had been our driving qualitative hypothesis, and we were also able to model it mathematically, but did not have sufficient numbers of cases for an independent quantitative assessment to be meaningful. The two groupings we saw were not in terms of the disciplinary divide between archaeologists and art historians, as we had at first assumed, but between those who saw the task in terms of categorization versus those who saw the clustering as an internal visual argument that, in some sense, was not captured by simple categorical arrangement. We don't want to make too much of this distinction, however, because we had expected to find differences within the ways people articulated internal visual arguments and did not design the study to account for the view that categorization and illustration were the only legitimate uses of visual sorting. Interestingly, we did not leave feeling like we had argued *about* this point with our collaborators, but only that we had failed to successfully communicate – like a pleasant conversation in a different language, where no one quite knows why the two sides don't seem to agree. This problem with the conceptual framing was both quite evident and very hard to navigate, but we left convinced that it was difficult precisely because it was the nub of the problem, and that the potential to address that framing constituted the intellectual innovation of the project and justified the time making a tool that could respond to the demands of making complex visual arguments at that level.

There were, in short, significant and unexpected difficulties in explaining the driving question to our collaborators, and together with small complaints about the user interface, this sometimes resulted in major and time intensive changes to the code, but the overall process resulted in a much better implementation than initially imagined as we were able to clarify function and utility for the tool through the back and forth of the interviews and the explanation of new functions. The project is available as an open source project on Github, and we are in the process of putting together explanatory text for its use on the project page and inclusion on PyPi and the Plone add-on page. That implementation of a web page supporting the tool was beyond the scope of this grant, and is being supported through other funds.

The tool was presented in various fora, including international and national conferences, campus-wide presentations, art history seminars, and specialized workshops. Examples were not limited to the Teotihuacan masks, but also included photo elicitation projects, comparisons of different ways of mapping air pollution, and visual arguments between different cultures.

We include an abbreviated list of presentations and publications, as well as some discussion of future areas of research.

Conceptual Overview (What we learned):

In spite of his towering direct contributions to aesthetics, Kant's most fateful influence on the study of art may be best conveyed in the second edition of the *Critique of Pure Reason*, with the formula: "Thoughts without intuition are empty; intuitions without concepts are blind" (B75). As this thought echoed through our intellectual culture, it eclipsed any particular Kantian theories of aesthetics, but also set the stage for what more recent thinkers have identified as the linguistic bias in our approach to art. The act of judgment was the subsuming of an intuition into its concept, and was the way in which subjective differences in intuitive experience could be oriented toward a shared scientific language about the objective world. The very idea that a visual intuition could have meaning or force independent of its conceptual framing was at odds with the Kantian project, and with the scientific framework that followed after it. It became commonplace to repeat that all experience was conceptual, and that all science begins in categorization. Claims about non-conceptual visual experience were taken to be mere opinion, unusable from the standpoint of a community of science, or vacuously self-evident. We cannot recount all the philosophical arguments brought against Kant, but we did feel that none of the visual data management tools currently available sufficiently allowed for any approach that didn't begin with schema-driven categorizations applied to visual data. The base was always discrete objects that could be classified, and then ways to make that more subtle or nuanced after the initial act of categorizing judgment; we wanted something that respected the first movement of discernment, and then allowed for the development of an argument in purely visual and intuitive terms.

Accordingly, the Visual Web Interface for Researchers (Vwire) was developed as a web tool for collaborating on arrangements of visual images, utilizing open source approaches to content management and exploring new intuitive tools for the user interface. Vwire was meant to address the linguistic bias

in the study of visual culture by providing an intuitive method for visual researchers to arrange images relative to each other while creating literal distance from previous conceptual labels. Thus, researchers would be able to demonstrate, communicate and argue about the objects of visual experience, while not being wed to a conceptual framework in advance. We did not want to contest one schema with another, but to draw the researcher into a more consciously drawn out and potentially collaborative development of conceptual schemas as such. To play on Kant, we wanted to encourage visual researchers to think of themselves as *actively blind* – as groping through a space without names, discerning patterns and relations, forming hypotheses and testing arguments – and thus building a new way to approach visual culture. Discernment as a process of placing objects in relation to each other, in other words, was the fundamental metaphor for using the tool, instead of judgments that place objects in relation to a conceptual scheme, as you would have in a typical Kantian approach to data. This marked a profound difference in the approach to our questions, even though many of the specific functions we provided were also accessible in readily available image manipulation and web presentation tools (see Price, Koontz and Lovings, “Curating Digital Spaces, Making Visual Arguments: A Case Study in New Media Presentations of Ancient Objects,” *Digital Humanities Quarterly*, 2013, 7:2.).

The more constrained idea for the Digital Humanities Start-up Grant was to exploit user interface and collaborative workflow capacities built into modern content management systems on the web, and to explore a situation where visual intuitions would contest conceptual prejudices and experts could engage in a collaborative process of discernment. We implemented and explored a prototype, with an eye toward future development. Along the way, we used the tool to explore several other approaches to computational analysis of images, and included techniques that allowed for an over-determination of the conceptual spaces by adding extra layers of competing interpretations. This was a tactical mistake, as it became a very challenging programming task, and we will explore some of the implications at the end of this report. In short, although it would have been tactically expedient to be less ambitious in terms of the tools, the effort has allowed us to engage in the questions more effectively.

The following pages are loosely divided:

1. The goals of the tool as a prototype,
2. The ethnographic approach to collaborative work in visual culture,
3. The technical problems,
4. The functions available on Vwire, and
5. Future directions.
6. Publications and presentations.

The goals of the tool as a prototype

The Digital Humanities Start-Up Grant was designed to explore the theoretical grounding for the larger Vwire project, and accentuated the ways in which a formal analysis of visual experience can arise through spatial arrangement. The approach is deliberately opposed to the classification processes that ground

most analysis, and the databases that support them. Although in some sense good tools for creating collages and then e-mailing them to friends have existed for a long time, and conceptual forebears for visual argumentation can be drawn back to the early years of the last century, none of these tools had captured the spatial data used to create the images – the collaborator always just received the final image and then responded to the collage as a complete object. Aby Warburg's *Mnemosyne Atlas* provides a stunning example of the use of collage and juxtaposition as visual argument, and has a strong web project devoted to it at <http://warburg.library.cornell.edu>, but even with its virtuoso combinations into a single Gestalt, the disarticulation of the component parts is left as a narrative task for the viewer: you have to write *about* the panels in order to respond.

Schematically, the traditional situation is that every subject is in two relationships to objects. One is the direct physical contact with the object, which is then interpreted by the subject ("it looks to me like the fork on the table is closer to me than the spoon"). The second is with other subjects who talk with each other about how they encounter the object and then agree on the right way to talk about their individual experiences ("you only see the fork as closer because you're on the other side of the table"). In brief, the epistemological situation is captured by the idea of perspective, and the agreement on a mathematical language that expresses where things are irrespective of who is looking at them counts as a true science where a view from no particular perspective (for example, the tabletop used as a grid with agreed upon coordinates) captures the objective truth of the situation as such. My vision, in other words, is embodied in a point and true statements about objects are made by creating a space where those points are put in relation to my act of seeing. (Erwin Panofsky's *Perspective as Symbolic Form*, Christopher S. Wood, Trans., Boston: MIT Press, 1996, provides the Neokantian touchstone in terms of art history).

By contrast to the act of a subject, we would speak of a lens that embodied an operation on the field such that objects become visible within that space – a process that allows objects to come into focus as such, and which precedes in some sense the determination of the object as being in one place or another. Our goal was to have the operation of that lens become apparent to the viewer, and in such a way that each person could see what sorts of effects emerged in terms of the visual experience because of forces acting on or transforming the lens. In part, this was to capture the metaphor of the pair of glasses in front of the researcher's eyes, but also the sense of a gravitational lens, where large gravitational objects cause the space in which other objects are experienced to be warped. Similarly, an influential community member sorting objects in a particular way might cause others to shift their sorts to better approximate that model. Our working hypothesis was that communities of researchers within a discipline would have shared lenses and that they could be contrasted to the shared lenses of other communities. Lenses do not eliminate the need to understand differences in perspectives, but work on a higher level of abstraction, as a condition for resolving the perspectives into a single whole. Different lenses provide different pathways to consensus, and even if no single convergent ground emerges, the conditions of disagreement can be made clear.

Vwire made accessible to the core research group a suite of mathematical techniques for analyzing the ways in which the collaborators used the images, although our main tools were in-depth interviews and “thick” descriptions of the experience. The most important mathematical techniques were various ways of projecting multi-dimensional data into two or three dimensions. Applying Multi-Dimensional Scaling (MDS) to a series of sorts of the same objects by different collaborators, for example, is a technique used on “pile sorts” in ethnography and psychology. In both of those disciplines, however, the idea is to draw out *implicit categories* and understand what types of conceptual schemes are being applied to a situation when the researcher and the subject don’t necessarily share the same way of talking about things. Some earlier researchers (notably Pierre Bourdieu in his understanding of fields across many years) have spoken about these approaches as capturing the nuance of multi-dimensional experience, and without committing users to any particular interpretation, we wanted to allow many different approaches. When speaking to potential collaborators, we often frame the tool quite differently in terms of its social science applications as opposed to the visual culture uses.

By generalizing to the level of abstraction appropriate to all possible projections through higher dimensional spaces, we hoped to provide a way of talking about engagement with visual experience that did not rely on objects being opposed to and interpreted by viewers. The goal was to understand how all the objects in a space, including other viewers, could have an active role in shaping visual experience. The technique was to allow multiplication of “acts of seeing” and then to give substantial tools for understanding the intersecting “ways of seeing.”

We did not want to force users to agree to any particular interpretation of their visual argument, but to provide an approach that expanded beyond what we saw as the existing and overly restrictive Kantian frame. One could categorize according to schemas, if appropriate, but could also move objects intuitively and without recourse to any given conceptual frame.

Within the context of these large goals, we developed a prototype whose functionality would work sufficiently well not to distract from immediate visual sorting tasks. As proposed in the original grant, we approached ten domain experts and asked them to sort 19 images of masks all putatively from Teotihuacan, and asked them to tell us why they sorted the masks in the way that they did.

With very minimum explanation from us (we asked them to sort it in a way that was “meaningful”), we sent them a URL that returned a blank white space with 19 images of Teotihuacan masks stacked in the middle. They were then asked to drag them into different places on the screen, hit the submit button, and then we set up a video conference later to discuss the advantages or disadvantages of the process. At all points, we emphasized that it was a collaborative process, and not a marketing study or psychological investigation into how they perceive objects. Most of them did not notice that they had been using a tool of any sort – and most of the extra functionality was deliberately hidden from them – and we felt that the framing of the questions did adequately focus the conversation on the tasks made possible

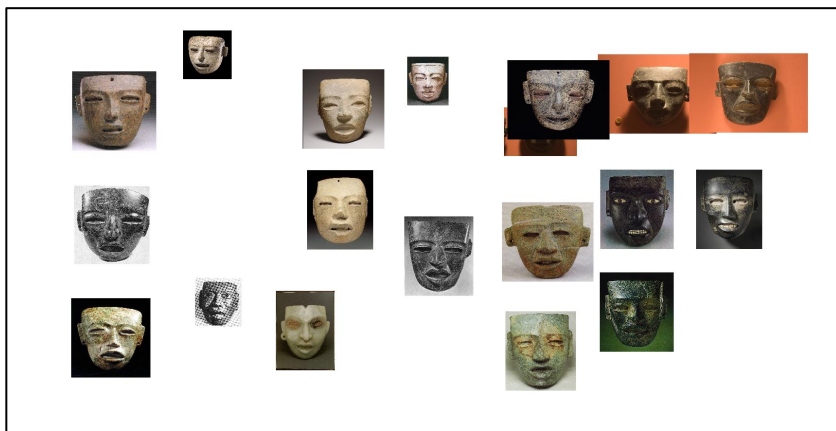
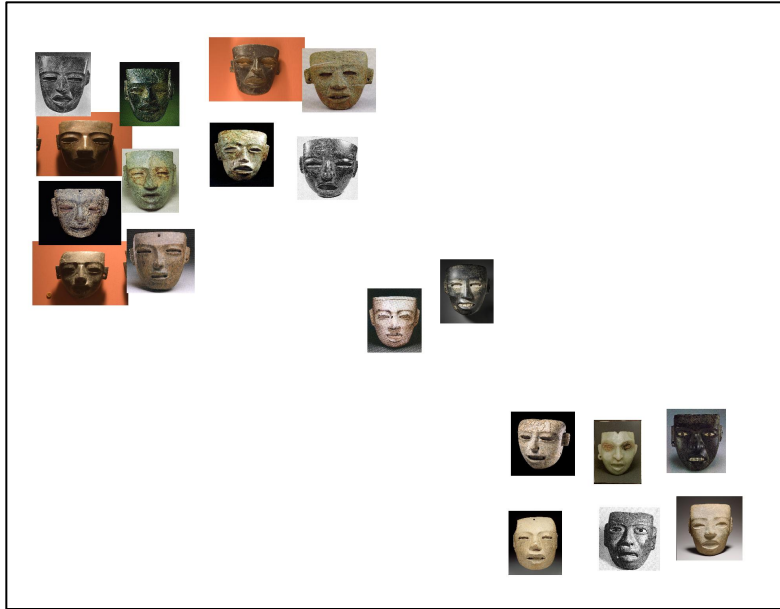
through collaborating on visual representations in this way, as opposed to being an evaluation of the tool or a psychological test.

For the print version, we provide the images saved by Vwire in the process and as a record of what had been done. Within Vwire, the individual images remain accessible. Below, there are several sorts as submitted, just to show how one might approach the task, and the variety of images provided. There was no text identification provided in the first round, although all participants had at least some familiarity with the category of objects and some were remarkably familiar with the corpus and even the individual images we supplied. The size and shape of the arrangements were constrained in some cases by the monitors they used, as well.

We will discuss detailed examples in the section on our collaborative ethnographic approach, which follows immediately.

Sorting images of 19 Teotihuacan Masks





The ethnographic approach to collaborative work in visual culture

We consider one of the main innovations of our work, and the principal deliverable of the NEH Digital Humanities Start-Up Grant, to have been the ethnographic approach to the collaboration. The approach allowed us to understand our interviews as a process of communicating back and forth about how to best explore a shared problem space. The collaborators were not always sure if they were subjects in a study or test users for a new product, but our intent was to have them walk us through how they approach problems in visual culture, with the specific example of these masks and a tool that lets everyone see how you cluster and arrange the images, as if on a tabletop. Crowder had used qualitative ethnographic interviews based on visual culture extensively in his own work, and found that it allowed for surprising insights to emerge as well as giving greater

nuance and subtlety to the analysis. Quantitative vs. qualitative approaches within the social sciences are frequently opposed, and unfortunately often with deleterious effects. In our process, the two are joined in the mutual exploration of a shared problem space where each participant uses whatever tools are best suited to the given direction of inquiry. If the quantitative approach begins with an act of categorization, we can capture the basis of that approach in setting the masks into straight columns, or otherwise clearly demarcating their position on the page. The qualitative approach begins in intuitive clustering, but also occupies positions on the page, which can be given numerical values. The mathematical frame allows us to compare different approaches and the ethnographic process allows us to see how the spatializations of visual arguments referred back to individual intuitions. By treating the qualitative and intuitive sorts as one dimension of approaching a problem, and allowing other interfaces (or even just linear sorts) to provide quantitative approaches, we can provide a unified exploratory space.

All of our time was spent at the University of Houston, as we were able to do all the interviews using Skype, join.me and Camtasia to discuss, record and review the interviews. Crowder also transcribed and coded the interviews in HyperRESEARCH and questionnaires were filled out by each of the researchers and an undergraduate assistant, all saved in Plone, which is the Content Management System that contains Vwire as an add-on product. Most of these tools were invisible to the collaborators off-site, although we got permission to record and made sure they knew who was involved in the interview and why. We used the same technology for every interview, even in the case of two collaborators who lived in Houston.

In the first round of interviews, we found very quickly that our collaborators either “got it” immediately or left an hour later still confused about what we were asking (or unconvinced that it even made sense to ask for such things). Several people in that first group told us it was “fun” and they could see lots of ways of doing things with a tool like Vwire. For example, one of the art historians, still early in her career, summed up her experience in terms of reflection on the process, and a welcome opportunity to explore the intuitive side of grouping:

I found it interesting to do. It’s definitely got me thinking about why I would group things the way I was grouping them, there are things that just felt, um, sort of correct to me, like this ought to be there but if I started to sort of question myself why I wasn’t really sure why I was doing it any particular way. Um, so yea, it got me thinking about the process.

Interestingly, even among those who thought of it as “fun,” there was some anxiety about the task. Several respondents thought there must be a right answer, and were openly worried that they would fail to sort the objects into the correct categories. Another art historian emphasized that the process had been “seamless ... and fun,” but really wanted the categories to be objectively valid.

I had never been asked to do such a thing before, so it was interesting and I kinda had to create categories, which I had never done previously and I’m not sure they will withstand any scrutiny.

... I actually thought that a stack of cards was sort of effective because it was sort of a little daunting in that I could keep plucking them off, like shuffling, and thinking “oh my gosh, there are more, there are more,” and as I thought that I thought how similar they all looked, and so it was a useful process in underscoring the way they do tend to cohere in a homogenous group.

And one archaeologist seemed to embrace the idea that it was about getting the sorts right through correctly applying criteria:

I thought it was fun; I thought it was hard, actually.
I think I might, um, well, you, if I decided to stick to the same criteria that I used the first time around, then maybe I would shift a few things a little bit, but... then I may think of different criteria in general that might produce a very different sort.

We had hoped that the tool would lend itself immediately to questioning criteria from internal considerations, but it seemed more apt for people to compare across different applications of criteria to the same objects. An art historian, for example, told us:

It was easy enough because the instructions were open ended and um, on the one hand that made it easy and on the other hand you had to actually think about it a little bit. If you had said “sort by color” or something like that, the criteria would have been a little more straight-forward. Instead, I had to think about what is it that I see as, um, a defining characteristic that makes some of these more similar than to others...

Even some of the respondents who didn’t see any value to non-categorical sorts were happy to have a new tool for placing objects into categories. One art historian, for example, used Power Point slides as a sort of “blank space where you can sort through your digital images,” and she thought Vwire provided “much more flexibility” when moving through the stack.

Some others embraced the task of helping us with the user interface, suggesting ways of creating more blank space to encourage freer movement, and asking about the other features we might include in later versions. One art historian had a very particular use case, which we’d like to explore in future iterations. He saw it as a way to make evolutionary arguments about how masks had evolved from each other. He pointed us toward Cobarrubias, a famous scholar of Mayan culture, and a chart that is reprinted, among other places, in *Masks of the Spirit: Image and Metaphor in Mesoamerica*, by Peter T. Markman and Rebecca Markman, Berkeley, Univ. of California Press, 1989. This sort of use, we should say immediately, is also what several respondents explicitly wanted to avoid, since they thought it would be overly subjective and impressionistic.

Pl. 2. Covarrubias' graphic representation of the evolution of the mask of the Rain God from an Olmec source, which we designate Rain God C, through the Oaxacan Cocijo, in the left-hand column, the Tlaloc of central Mexico in the next column, followed by the Gulf coast rain gods and finally, those of the Maya in the right-hand column.



For this art historian, however, it opened up a way of reclaiming the proper intuition within the earlier approaches:

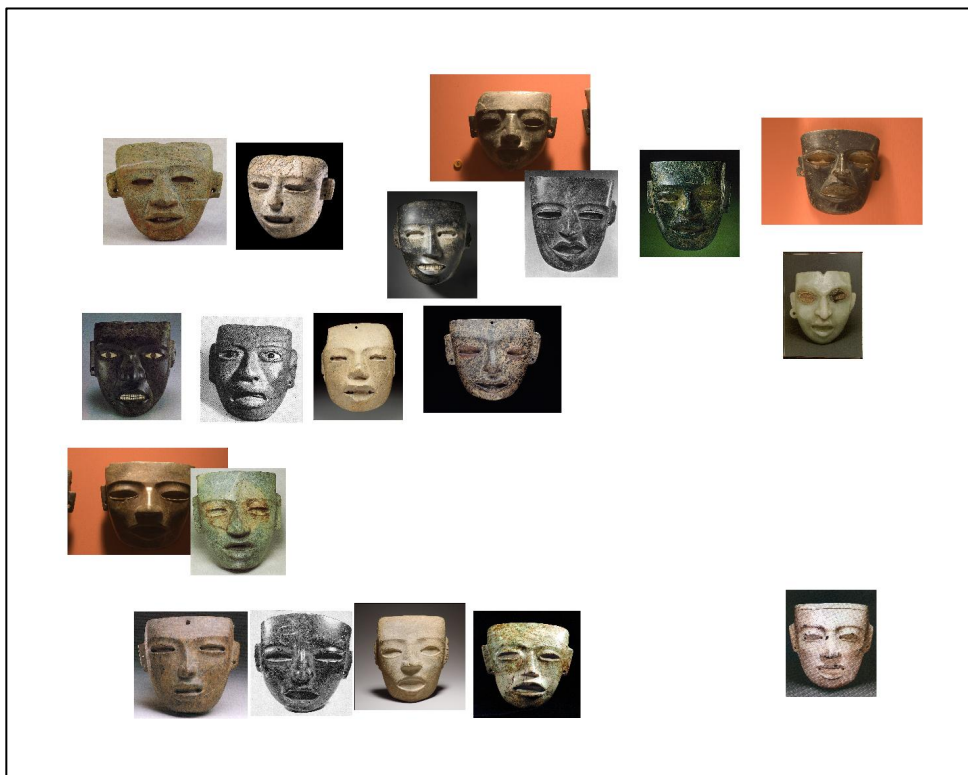
The other thing I want to say is that I instantly see the application of this for any other number of kinds of areas of where you have a similarly disparate group of objects that you want to organize, um, and like I said, you know, the Cobarrubias chart is something I've been working very closely with this week, and I've got drawers full, and it's been a real challenge, because I got pictures but then I don't have all of the cataloging information and I kinda don't want it, and you know, how do I actually manipulate it.

I think that, for me, it's just, it shows a lot of promise because you know, I can start recognizing different kinds of patterns, different kinds of treatments in terms of, like well, "oh, so it's very clear that, you know, that these two objects have something to do with each other in terms of the brow line or in terms of the mouth" or something like that. Um, and so, I see a lot of promise, and I see a lot of promise, like I said, for other kinds of objects. Like, I want to give you all of the images of my preclassic figurines [laughing]. It would be like, "OK, help me out here!"

Among the most skeptical of the respondents was an archaeologist who was already emeritus faculty, and who possessed an extensive first hand knowledge of the masks. She was consistently dubious of any attempt to make arguments around the photos, using any tool that separated the researcher from the actual object. For example, when speaking of one of the masks:

This piece I know was excavated at Teo and I had my hands on it in November, I was in the lab at the site museum in Teo and held it. I had seen it illustrated in drawings and photos which were pretty muddy, and I'll just tell you there's no substitute for actually getting these things in your hands, feeling them, looking at them from all different angles, and so forth. Another thing I will add just before we get started, I've been looking at an awful lot of photographs of these masks and they are from the museum collection in Mexico City and there are many times when you cannot distinguish the same mask from one photo to another because it depends upon angles and lighting and all of that can really throw off what it looks like.

From our side, it seemed very clear that she had in fact used the tool very much in the way that we were hoping, and produced quite meaningful sorts. It was just that she also used other criteria – like where the masks were found and whether she thought they might be falsely attributed to Teotihuacan – to refine the arrangement of clusters. Below is the result of her first sort, reluctantly carried out as much as possible on the formal characteristics directly available through the photographs.



She ended the interview still insisting that there's no real argument to be made, since each mask is different and putting them all in a single plane in relation to each other can't make sense without the entire corpus of masks as reference. We originally thought that she didn't understand how we wanted her to use the tool, but later decided that she, in fact, was very adept at precisely that sort of thing, and just didn't like the particular selection she had been given – she was saying a much better argument could have been made with a better selection, and not that no

visual argument was possible. This is an interesting case, by the way, of the value of the in-depth ethnographic approach. She had said very clearly: “No, there’s no argument to be made that I can see in this. They are all different.” But in context, we can see that her concerns were with the selection we had given her – “there’s no argument to be made with this selection” – as opposed to “there’s no making visual arguments using a tool like this.” Even then, she didn’t see a real utility to the tool for her basic research purposes, although she could see it as an aid to conveying an argument to others, if sufficient care were taken in the selection.

She was the best informed about the masks, and had a remarkable recall of details associated with each. Other archaeologists, who were not quite as familiar with the overall corpus, had similar reactions. We asked every respondent if they could imagine using the tool, and four of the archaeologists had similar responses. A museum curator, for example, when asked if he could imagine using the tool said:

Yes, I could, except for the fact that, in this case, the exchange is different in that I am not the one who chose the images, if I were to put together an exhibit or work on how I could make an argument, with images that I would have picked to either support it or rather reject it. And so, I’m not knowing what kind of argument I’m making and not having selected the images, I’m a little bit in a quandary here.

And a university professor, when pressed on his experience:

...the honest truth is, I wasn’t quite sure why I was doing it, other than working with the tool. And so, I was trying to give them coherent sense to me, and so for me, as primarily a teacher, I would use them to illustrate concepts to students.

Then there was one university professor who wasn’t even sure it could be used for that sort of heuristic device, because the ordering of the visual intuitions by themselves would not be understood by the audience.

I don’t think anyone would intuitively necessarily know what I’ve done here. It would demand some explanation.

Perhaps the most interesting result from all this, as we concluded our first round of interviews, was how confused we were. Although we had committed to listening more than talking, we were often spending more time explaining the questions than the respondents spent answering. We had begun from the hypothesis that archaeologists and art historians would have systematically different ways of sorting the masks. This may, in fact, be true, but we hadn’t asked the right question to elicit that answer one way or the other. What we saw, instead, was an opposition between people who saw the task of visual sorting as a matter of grouping objects into their principal categories – which we came to think of as emblemized by the impulse to stack images in columns – and those who wanted to create associations in as many ways as possible.

One younger archaeologist, for example, was very excited to find out that you could resize the images (a fact we hadn’t advertised). He produced the following

arrangement. Although it was difficult for him to put into words what it meant, he felt that it had been successful at conveying his understanding at the moment.



In many ways, we had been expecting this sort of thing from everyone, and that we would then be able to go on and compare the internal differences between sorts by going through the images and their relative positions slowly and carefully. Our second series of sorts, following on the structure we had decided on in advance, was to be three different arrangements of the same 19 masks, each arrangement exemplifying a different underlying “theme.” With some respondents, we were struggling with explaining what we wanted, and how it related to the idea of a visual argument as opposed to the visual illustration of a conceptual argument. The archaeologist who created this arrangement, however, very much embraced the idea, with very little explanation. We turn to the second round of interviews, leading with him, to try to exemplify what was at stake.

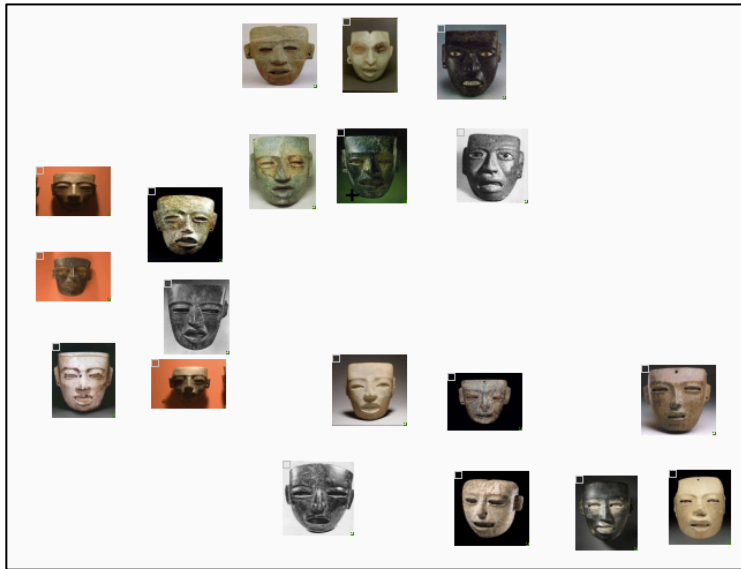
Round Two Interviews:

We tried to be respectful of the respondents’ time, but we were confused by the range of the first interview responses, and found it difficult to know how to move to the second round in a way that would clearly be worthwhile for everyone. In very broad terms, we had imagined the first task to be integrative, and had expected very large categories to drive the main clusters, with more intuitive differences expressed in the internal articulation. The archaeologist who produced the sort, above, very much followed that paradigm, but most of the respondents hadn’t.

In the second round, we asked all of the respondents to produce three different lenses, and to have them “mean something different” each time. Several respondents found this idea to be frankly silly, since the sorts didn’t “mean” anything, but only helped explain some idea or categorizing schema. This one

archaeologist, however, really liked the idea, and he produced the following sorts. We examine them, in depth, as an example of what we had expected would be the most common response.

First sort, second round:



His strategy here was simple, beginning with what he considered the six “typically Teo” masks on the left, and then building toward the right in an upper and lower branch. He had seen lots of small figurines known to be from Teotihuacan, and these were the “closest to those clay figurine heads ... stylistically.” As you follow the upper right fork:

The further you go away, in my space here, from the six here on the left, the further to the right you go, you get to actual kinda more human expression and the possibility that there could be attention individual who might be represented, who might look a little bit like one of the people in the masks whereas it’s a bit more anonymous here to the left.

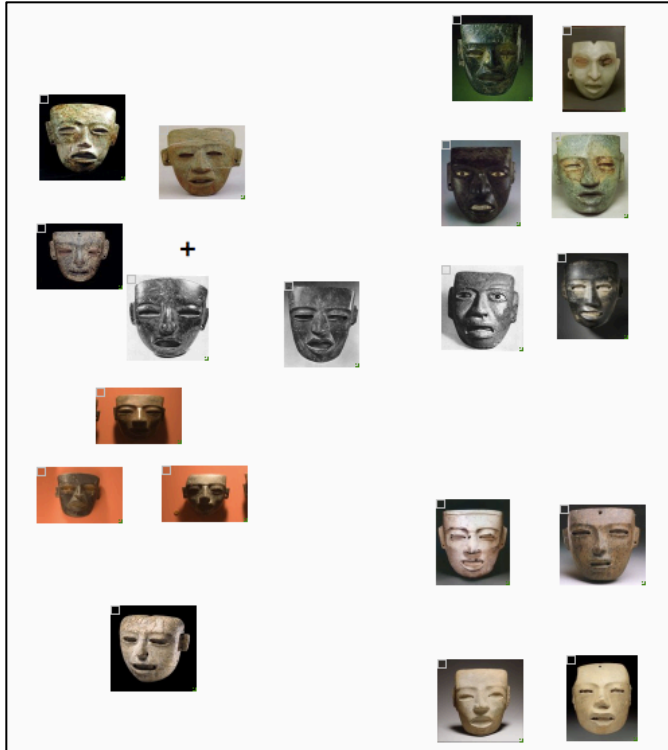
The ones on the lower right, he opined but with lots of caveats about expertise, seemed like they might be from a different cultural group. When we pointed out that he disagreed in his opinion from some of the other experts, he was willing to withdraw and regroup – he thought of the tool as far more preliminary, and his opinions about style were not certain enough for him to base his arguments definitively.

He was willing, however, to point to specific things about the faces on the extreme lower right, and use them to justify a spatial distance from the set he thought of as more typical on the left. Importantly, it wasn’t that there were three distinct “types” captured in the groupings, but that they sort of “went together” and more or less reflected “the blank Teo stare” or “could come from West Mexico” – i.e., the judgments were imprecise and difficult to put into words.

So, there wasn't a sort of a nomothetic list of things that each mask had to have before I would put them in the category, it was more intuitive, not necessarily, um, sort of second nature. I mean I did kinda move some things around.... I didn't immediately put these six aside because they immediately struck me as TEOish, I sort of had to. In other words I never actually enumerated what are the traits that make a TEO style figurine heads/mask, so it was more going on a feeling than explicitly listed set of traits, um, but it did take me a few minutes to settle on which masks I thought most conformed to the kinda TEO typical repetitive TEO mold figurine style.

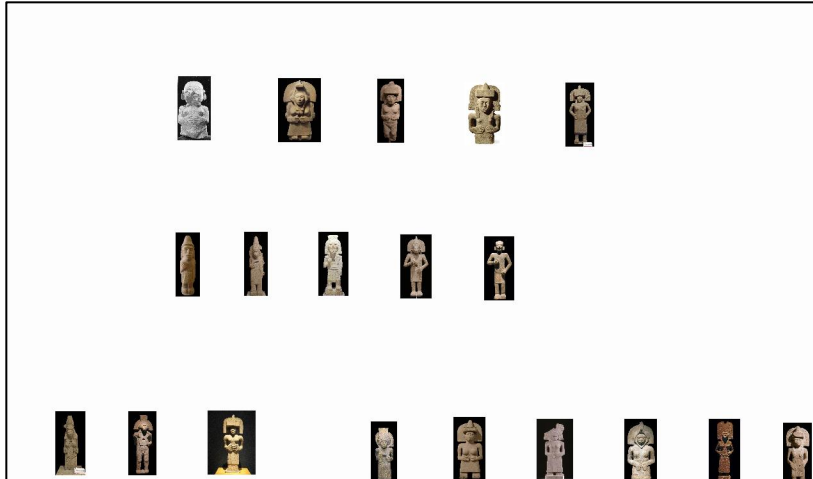
For his second sort in that second round of interviews, he had felt that he wanted to explore the different ways of sorting, as well as give a concrete example of a different criteria for organizing the masks. He picked "craftsmanship," which is resonant with the difference between these masks and the figurines he was referencing above – most of which do not strike viewers as carefully wrought.

... yea, going from Left to right in terms of low workmanship on the left and high workmanship on the right, one of the considerations there was size of the mask, just because I think it takes more skill to do, I mean. A lot of the ones I've put in the low workmanship exhibit a lot of skill; some of them are highly polished; there's a lot of symmetry, symmetry, but larger masks, um, in my little experience making replicas of stone artifacts the larger the thing, the harder it is to kinda make it. So that was one consideration in terms of workmanship. Another consideration in terms of workmanship was kinda ineffable, in a way; it was just sorta just some of the ones that I put on the far right, just struck me as being more masterpieces than the ones on the left.



For his final sort of the second round, he mentioned “having trouble finding criteria beyond the ones I used in the first and the second sort that would apply to all of them and that I could use to manage or to move them into a different space.” So he thought about it in terms of what he would do to teach a class to undergraduates, and he talked us through groupings of two and three masks, each of which had an exemplary trait. When asked to compare the three, he said the first “had a narrative,” the second was a sort of “contingency table” and the third was a “view from nowhere,” where the objects just were what they were.

As we’ve noted before, there was a real divide between the respondents who were excited about making multiple sorts and the ones who didn’t know why we would want to do more than one. That even this archaeologist, who had been very enthusiastic about multiplying sorts found it more difficult than he had at first imagined is interesting. For one of the art historians, who had been especially reticent to do multiple sorts on the same Teo masks, we quickly uploaded other images of her own, and let her do what she considered a more meaningful exercise in visual sorting. The sort simply represented how they were holding their hands, and then how elaborate the headdress was for each figure. Smaller differences were too subjective to be taken into account, at least with this set or as substantial evidence for talking about style as such.



A number of the other respondents had similar responses, and instead of repeating all of them here, we'd like to only draw out a couple of themes. First, there was a possible middle ground explored by those who liked the idea of a prototype and a seriation as each exemplar moved away from the basic type. One of the most interesting along those lines was an art historian who studied a different culture, but thought the tool had potential for approaching the group "blind," and "developing criteria" and getting a feel for the "Gestalt" of the prototype at the same time. After explaining in detail how she was trying across several sorts to exemplify a prototype, she spoke to the difficulty and the promise of the technique. She begins, at the end of an explanation of the arrangement she made, talking about how it broke down:

So I sort of felt, "OK, that's coming down below this one." Um, um, and here I kept moving things around but I was seeing, again based on the eyes and the proportions of the face, similarities here, but I was having trouble connecting them to larger groups, so they ended up in a little cluster in the middle. Um, these remained outliers. And then here I did another little sort of detour where I saw similarities in the eye shape here, but then that looked more similar to me, and these became less and less similar as I moved down away from that (Far right column). So this is definitely moving away from this original, I suppose, because they do have the elongated eyes but they sort of start to look more hooded and I don't know... And I did find that while I wanted to be very logical and sort of, I would have liked it to be in sort of three rows or something, and have distinct categories and then a seriation within those categories, that's just *not* how it kept ending up on the screen. And the whole, I mean, I guess in explaining in it, I'm going back to the vocabulary of sort of how the people categorize at least based on prototypes and that sort of thing that I've read a little bit about years ago. That's not necessarily what I was thinking at the time I was doing it, I wasn't thinking in terms of prototypes or seriations, as much as I was just moving things around. But I think that *is* what I was doing...

We tried, throughout the project, to distinguish between the exploration of user expectations for visual argumentation, as such, from the execution of the tool. For all the interviews, we sent the respondents constrained sets, already loaded

onto a page and ready to be pulled into place. This isolated them from problems with the tool, but it still created issues with the general interface that we wanted to address. The size of the images and the blank space for sorting, for example, and how well it dealt with the number of images or with additional information, all came up in the conversation.

Of course, we all like to think of ourselves as learning from our mistakes, and so we stepped back to figure out what was going on and how to implement a better system. Almost all of the respondents wanted more information, and so we showed them that the tool already let them double-click on an image and get a page with the full-size image and long text descriptions as well as size, material and other objective facts about each mask. The problem was that we could show how one might implement a better database approach for images, as small improvements on readily available platforms, but we kept running into technical difficulties that meant we couldn't provide all the functions one expects from a normal data management system and the extra functionality we were exploring. We didn't want to lose sight of the intellectual purpose of our work, and were aware that we wouldn't be able to beat Google in a competition on resources, so we stepped back and started over (again) on identifying the core innovation and implementing a system that explores its use.

The core innovation, which we are still groping towards, is that the movement through a database, or any system of information, has something profoundly in common with the movement of clustering we were tracking across disciplines in the construction of visual arguments. Plenty of people were happy enough with the idea that you could make lots of lists, and that the computer could calculate what was necessary about the lists in the background and help you find what you wanted. But about half thought that something else was going on, and that the possibility of constructing a multi-dimensional argument, through the intuitive process of clustering and setting into arrangements, represented an interesting innovation in itself. What we needed, we felt, was something that could do the simple lists, when necessary, but also provide the visual argumentation a way to engage with the larger information base.

For example, if someone created an argument, they needed to have some way of finding similar arguments, or of finding other pieces of data that fit (or didn't fit) the argument, and somehow pulling them into the growing database. If, to follow further on the example from above on three sorts we wanted to be able to sort a larger corpus in terms of both level of workmanship and "typical Teo" then what are the tools that we would need? Mathematically, the answer was relatively simple, given the tools of multi-dimensional projection and the ways in which similarities across multiple dimensions, even when not immediately apparent to the naked eye, could be computed and returned to the user.

A number of undergraduate students had been involved with early prototyping efforts, including Lauren Lovings, who worked extensively on providing an interface where more information on each mask could be accessed, and where purely formal sorts could be made based on traits. We spent a lot of programming time trying several different approaches, and integrating them with the interviews with the collaborators, but that was beyond the scope of the project and wasn't fully

successful. For example, the amount of information publicly available on the masks turned out to be far less than we had expected. The Teo masks have long been collected as art objects, and for great sums of money, and so very few have been found in archaeological context. The sorting of large groups of images based on traits was more successful, and we include – for example – a section of her sort on expressive vs. passive lips.



We had imagined that it would be interesting to compare this with other trait specific lenses, but found that it took too long to explain what was happening across the whole corpus. Even with Vwire, building the lens still took hours of carefully examining the images. She was also very shy about asserting anything conclusive about her lenses, and said lots of the decisions felt subjective. Taken together, it became clear that the tool would require a very long period of use by people already familiar with the corpus – something on the order of the time spent creating a catalog for a show or preparing a book – in order to be of use, and that there would have to be lots of text added on to each sort in order to explain it. This points to a possible collaboration, where the sorts are worked on together in a number of ways, and experts converge on an interpretive strategy – with tools that easily identify outliers, as well as patterns within the other lenses that might be difficult to see with the naked eye – and we hope to follow that direction in some way, next.

As we were developing this version, and responding to Lauren’s use cases as well as the interviews with our collaborators, we added tools for integrating more text into each lens, as well as ways of joining across lenses, making multiple groupings within lenses, and searching for places where objects inside lenses were contained in other lenses. By searching for objects that were “further” or “closer” in the multidimensional space, for example, you could see if there were things about the object images that were showing up consistently across the multiple sorts that made up the larger space, even if that would be difficult to access from simply your own memory of the objects. These functions were not in the original project

description, but it was decided that without them we could not use Vwire for more than very controlled prototypes, small heuristic demonstrations for classes, and anonymous surveys. None of those smaller use cases were abandoned, but the larger group of functions was tantalizingly close, in terms of various modules we knew to already be in existence and easily added to the Vwire mechanisms. We have that functionality now, as well as better implementation of the interface with the numerical analysis tools, but have not completed the debugging. It's simply been a much larger task than we had imagined.

The technical problems

Early in the process, our original technical plan was abandoned because the internal support staff was let go (for unrelated reasons) and the private vendors we approached were extravagantly expensive. We decided to do the project in house, with Price serving as the lead (and only) programmer. Late in the process, a local expert in javascript programming (David Feil) was brought in to help with the interface, but he was unable to finish all the tasks needed within the budget we had. There was also a decision to add considerable functionality beyond what had been discussed in the grant, simply because there weren't sufficient use cases without that added level of function. These factors have caused the delivery of a full add-on product for Vwire to take considerably longer than had been originally anticipated. The project is already available as an open source download on Github (<https://github.com/DrDanPrice/Vwire>) but we have not had time to prepare all the instructional materials for proper installation and use, nor completely debug all the extra functionality and have it available at <https://pypi.python.org/pypi> or <http://plone.org/products>. The functions that were promised in the grant application are available and solid, but the tools that allow for dealing with extra dimensions in multiple ways are buggy. We expect to have those problems solved within the spring semester, and are actively pursuing the next round of projects to implement with Vwire.

These are the types of challenges that are expected in any grant, however, and were not particularly interesting intellectually. The more difficult technical challenge had to do with the conceptualization of the lens as a content type within the content management system – that is, with what it means to have these places where one organizes the groups of images (what we call a lens) and then one has that lens as itself something to be shared, discussed, and modified.

Our first idea was to treat each lens as a “smart folder” or dynamically loaded collection of content within a page that provided symbolic links to the objects as if they were contained inside like a folder. They are called “collections” in Plone, and are used for things like collecting all the news items for a certain city, and displaying them as if they were in that folder, even though the actual objects are in a different place. This turned out to be a bad idea in large part because Plone's open source community was in the midst of changing the way it dealt with content types and following a broader trend in web applications, especially in Python, to think in terms of browser views in ways that made content types less important. That is, the view

defined how things were displayed, and allowed for customization without the multiplication of content types that had earlier dominated, and which had led to confusion, duplication and processing errors. Content types inside of content types, like folders holding collections that then pointed to folders, led to basic confusions and it made good sense for them to move away from that earlier paradigm.

More importantly, the Plone community was responding to developments in the CMS market place where very light blog hosting was dominating a large part of the market and specialized web applications linked directly to relational databases took over other content management tasks that the full service CMS would have done earlier. Plone, which had been very early and is still a leader in the open source CMS world, seemed both too heavy and too slow for most users and they consciously retooled a lot of the code with Plone 4.0 to rely less on content types. We had started when Plone 3.2 was the new release, and was still very much built around the content type architecture, and are now on Plone 4.3, which has all but abandoned that approach.

Interestingly, these changes also followed a philosophical trajectory, because the change in approach provides ways of better specifying the schema through which different content objects can be viewed, but made it more difficult to see how each act of constructing an interpretation was involved in forming (or deforming) the object. The cleaner distinction between viewing an object and constructing an object provided better technical control, but also obscured some of the ways in which the object was being constructed – or at least kept it in the hands of experts, and out of the sight of the average user. As you might see with technology more generally, it gave ways of displaying more complexity, while putting fewer demands on the individual to understand the origin and structure of the complexity. From the standpoint of what we wanted to do with the lenses, the change masked the difficulty instead of giving you tools to explore it and our technical team was constantly fighting with trends in the way the broader community was thinking about appropriate best practices in programming for the web.

We should also admit that the initial users of Vwire lenses based on transformed collections found the interface cumbersome and confusing. Each new lens/collection allowed you to define what was to be displayed, as you would in the search of a database, but it meant that you used several different interfaces in order to get an object both into the content management system and then onto the display. Each new collection can also have fields on it – as you would for a database – and that was tempting, but further confused issues when some of the fields were duplicated in the collection schema and on the raw object. That is, by using the collection content type as our basis from which we constructed the schema for a lens, we could see enacted many of the reasons the community was moving away from transforming content types as a programming strategy.

We tried several implementations of the collection, all basically splitting the database logic from the display logic in different places. For example, early versions tried having the content objects displayed in special folders, and having extensive searchable fields on the content objects, which then displayed on the lens with extra links for loading information in different ways.

After the second round of interviews, we were also exploring better ways of showing how the choices were being made concerning the mathematical models used to represent the analyses we wanted to do across multiple lenses using the same objects – as we would need in order to do the multi-dimensional scaling or principal component analysis on the various sorts discussed above. We were able to do it, but the process was cumbersome, and it was hard to see how each object was related to the lens and how multiple lenses should be related to each other.

We decided, somewhat rashly, to start the programming over again using a different paradigm. This took a lot of time, but has paid off in terms of a better user experience. We explored using the page or document type as the base, but it didn't have convenient methods for storing large files, as we would start having with the Vwire lenses as we expanded the use of the mathematical modeling and projections. We stayed with the lens as a modified content type, but instead of the collection, we used elements of both a folder and a page. This last version is now available to see, through contacting the authors, but is not fully stable. We hope to have the release candidate out later this spring.

The Functions Available on Vwire

The initial impulse of the Vwire project was to explore how spatializing arrangements of visual arguments on a screen could convey complex intuitive engagements with objects, through a separate content type we now called a lens. By making it a content type within the architecture of Plone, we could take advantage of all the machinery built into it as a CMS, including user management, role/group/user based permissions, automatic integration with other content types, and use as a web-based survey instrument for anonymous collections. There are a number of use cases around content management that we hope to pursue, but each requires funding for the other aspects of the individual projects – i.e., researcher time, system administration, design and outreach/marketing, etc. While pursuing some of these projects, we'd also like to think through the conceptual challenges of working with spatialized arguments, and the more general case of a multi-dimensional semantics that captures insights from the humanities in terms amenable to mathematical representation and manipulation.

The natural expansion of the intellectual project embodied in Vwire itself is accordingly to explore the ways in which one can work with groups of lenses, objects contained in various lenses, lenses within other lenses, and diverse object types within lenses. Although we have tentative versions of these different functions, they need to be explored in the way that we worked with the lenses themselves, above, and we're currently looking for collaborators who can help. Because of time, we only mention some of the functions, along with screen shots where applicable.

As we've already mentioned, Plone is one of the oldest content management systems, and much of it feels old-fashioned to the larger web community. It was developed as a way of making Zope user-friendly, and Zope was the first way to make Python's object-oriented approach to programming accessible to web projects. The user base, going back to the 1990s and spanning the globe, has been

large enough to sustain an open source community of programmers and developers, even as much of the original user base has turned to easy to use off the shelf hosting services, social sites, and php-based CMSs. In some sense, this is a mark of all technological success – as new technologies made it possible for people to participate with less effort, the most popular functions are broken off into standalone approaches. Plone has been at the forefront in developing many of these technologies, and in championing the open source approach that encourages precisely this sort of divergence. From the standpoint of the naïve outsider, the problem is that as Plone developed new technologies, it tried to keep supporting the old approaches, and often the documentation reflected several ways of doing things, and many times no clear-cut guide for which was preferred. A concerted effort was made to fix documentation at the time they moved to Plone 4.0, however, and the situation has been greatly clarified, even though they still suffer under the reputation of being hard to use, or being only for expert programmers. At the same time, the project is mature, has been used in very large enterprise-scale and government installations, and is capable of doing anything you can expect from a web platform or CMS.

In terms of its architecture, everything that can be treated as a content item shares certain ways it can be manipulated, and we made sure that the Vwire lenses participated in that basic machinery. That allows it to integrate into all the ways that objects are governed by rules (i.e., that e-mails can be sent if upgraded), sharing (with many levels of group and individual permissions), indexing, tagging, version control, visual display and theming as well as general backup and life-cycle management over time.

Early in the project, we decided to explicitly incorporate modules from an open source scientific collaboration in Python called Numpy. Using Numpy allows us to access all the modules from Scipy, as well, and together they constitute an impressive open source competitor to Matlab, and to the functions that contemporary scientists and engineers expect from their computing environment. Numpy, however, requires a separate installation on the host machine, and can be tricky to implement unless you build the Plone instance from source. With Numpy installed, we have access to efficient implementations of linear algebra, and can work through many different types of projections from multi-dimensional space into the visual space of the lens. Almost all of these functions exceed the scope of the original grant, but we provided an architecture that could support the math on the backend, and our purpose all along was to give a humanities-inspired visualization of nuance and multi-dimensionality in the display of a web-based content management system.

Without getting into the many details of Plone's own architecture, the important thing to understand about the Vwire lens is that it's built on the foundations of the folder content-type, as an extension of its schema that includes additional fields for tracking how one positions other content objects in the lens. One could literally use it to replace the folder type, but it's too integral to the machinery of Plone, so we decided to duplicate types. We liked the idea of being able to compare them side by side, and to show the ways in which movement through a set of objects – and a content management system is a specialized version of a

database, in that sense – could be effected by different metaphors for visualization. After all, the folder is a metaphor for a file system where objects are taken to be, at the end of the day, single physical things located inside a container. This doesn't have much to do with how the actual bits are stored, but is convenient for organizing the other functions of searching and referencing objects. The basic metaphor of the lens emphasized that the objects could be multiply placed within an expanding multi-dimensional space, and gave some mechanisms for thinking about that multiplicity and how it structured searches and other types of reference. The traditional folder, in that sense, is just a single dimensional representation of one of the ways to organize the content – it is a list – and thus is one of the ways in which you can think of a lens. Still, it's enough of a conceptual shift that we didn't want to force people to not be able to use folders in their accustomed ways.

The Standard Plone 4.3 Folder (with two types of display):

You are here: [Home](#) / [TeoMasks Base](#)


Contents **View** Edit Rules Sharing Actions Display Add new... State: **Private**

TeoMasks Base

by [admin](#) — last modified Jan 22, 2011 11:53 AM — [History](#)

SLAM 2871978.jpg
[Read More...](#)

rediscovered 158.jpg
[Read More...](#)



You are here: [Home](#) / [TeoMasks Base](#)

Contents View Edit Rules Sharing Add new... State: **Private**

TeoMasks Base

by [admin](#) — last modified Jan 22, 2011 11:53 AM — [History](#)

[Up one level](#)

« Previous 20 items 1 ... 3 4 [5] 6 7 ... 10 Next 20 items »

Select: All				
	Title	Size	Modified	State
<input type="checkbox"/>	19800507 Christies 171.jpg	1.4 MB	Jan 16, 2014 07:53 AM	
<input type="checkbox"/>	mm033592_l.jpg	201.7 KB	Jan 16, 2014 07:53 AM	
<input type="checkbox"/>	mm033514_l.jpg	120.9 KB	Jan 16, 2014 07:53 AM	
<input type="checkbox"/>	APT 1985 Lot 93.jpg	35.1 KB	Jan 16, 2014 07:53 AM	
<input type="checkbox"/>	APT 1985 Lot 94.jpg	225.1 KB	Jan 16, 2014 07:53 AM	
<input type="checkbox"/>	APT 1985 Lot 89.jpg	44.4 KB	Jan 16, 2014 07:53 AM	

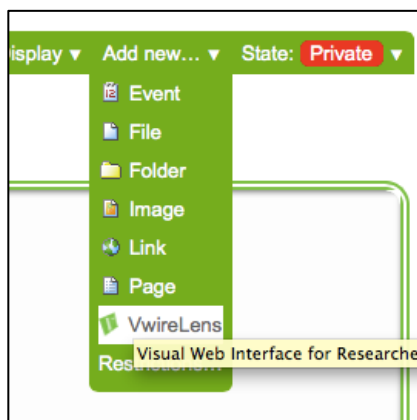
The intellectual difficulties we had – which tracked many of the technical difficulties – grew from the conviction that we didn't want to provide just another way of displaying folder contents, although we *also* needed to incorporate that sense

of capturing lists of items. The smart folder or collection had been tempting because it divorced the folder from the literal sense of containment, and allowed it to be a place where results were listed – like a database search – but so that users still had the sense that some sort of logic had caused these objects to be grouped together.

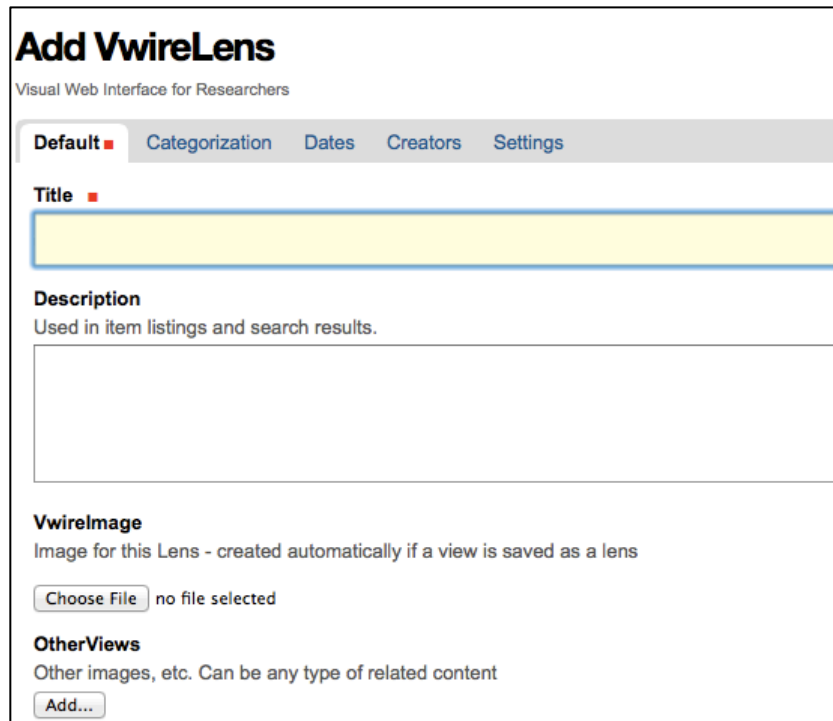
We wanted, instead, something that helped users explore why they were grouping things together. In that sense, a lens is between a folder that contains things and a database listing, and captures something of our modern experience of desktops and internet browsing, where it doesn't matter where something is as much as whether we can find it when we look for it.

It is worth mentioning that this desire, on our part, to create a tool that made you spend more time understanding, creating, and distributing objects was one of the most confusing things to our technological partners, and generally to anyone involved in developing web tools for the general public. We wanted the technology to embody the difficulty of discerning between intuitions, and then give tools that were already in use in other contexts the role of helping deepen our understanding of that discernment. It should be no surprise that people look at a lens and say, “but what does it mean?” At the same time, the tool should not encourage an easy categorical answer, but should support the original intuitions and give them the depth and nuance necessary to reflect the discerning gaze. And this is the difficulty that made us want to push further with Vwire's interface, so that it was about how the entire CMS could follow the logic of the visual sorts; where something visual and intuitive was respected in terms of what questions you could ask, and where it could become clear what it would mean to suggest the next image in a series, or to see something else “like this group” in another lens, perhaps even with a different underlying corpus.

Walking through this process, very quickly, and with a nod to both the need to make the explanation more complete and the styling more elegant – but aware that we are already past our original deadlines – we want to show only enough to demonstrate where the conceptual problems are emerging and being addressed. First, from any folder or other lens, you can “Add new...” and choose a lens.



This option gives the user a very straightforward edit/creation page (with many options not showing, including tagging, and ways of setting up anonymous surveys, dealing with sharing, history, versioning, and rule-based actions):



Add VwireLens
Visual Web Interface for Researchers

Default ■ Categorization Dates Creators Settings

Title ■

Description
Used in item listings and search results.

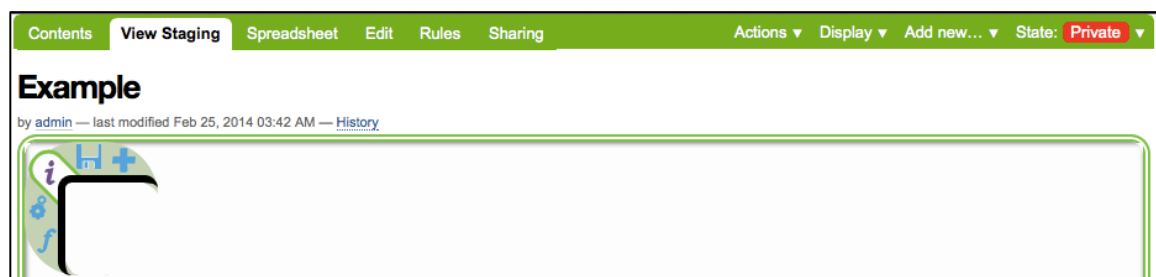
VwireImage
Image for this Lens - created automatically if a view is saved as a lens

Choose File no file selected

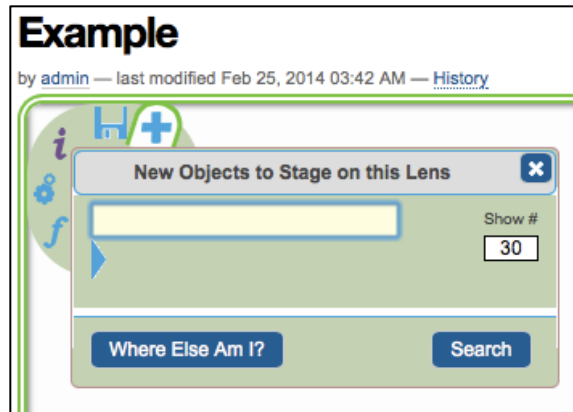
OtherViews
Other images, etc. Can be any type of related content

Add...

The resulting blank lens acts as a nested tool, and while the user still has access to all the tools provided for folders by the Plone architecture, and all the navigation, user controls and display theming options provided for the site as a whole, we also have a special control icon in the upper left corner of the staging area.

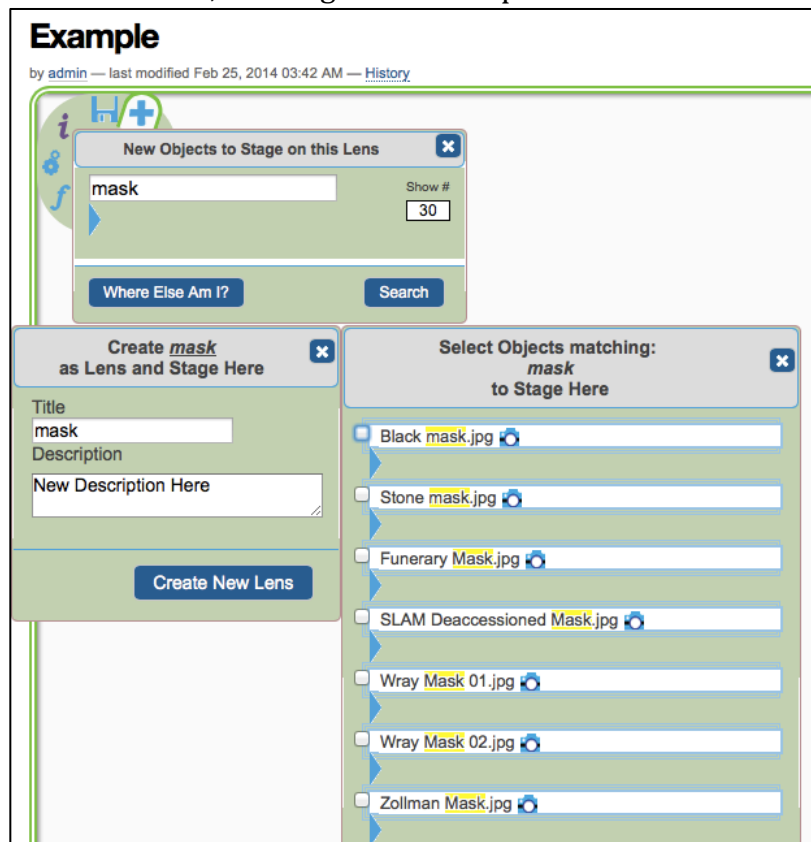


Selecting the “+” gives you the search field, and includes number of results and a special button for displaying all the places where this lens has already been included in other lenses in the site (“Where Else Am I?”).



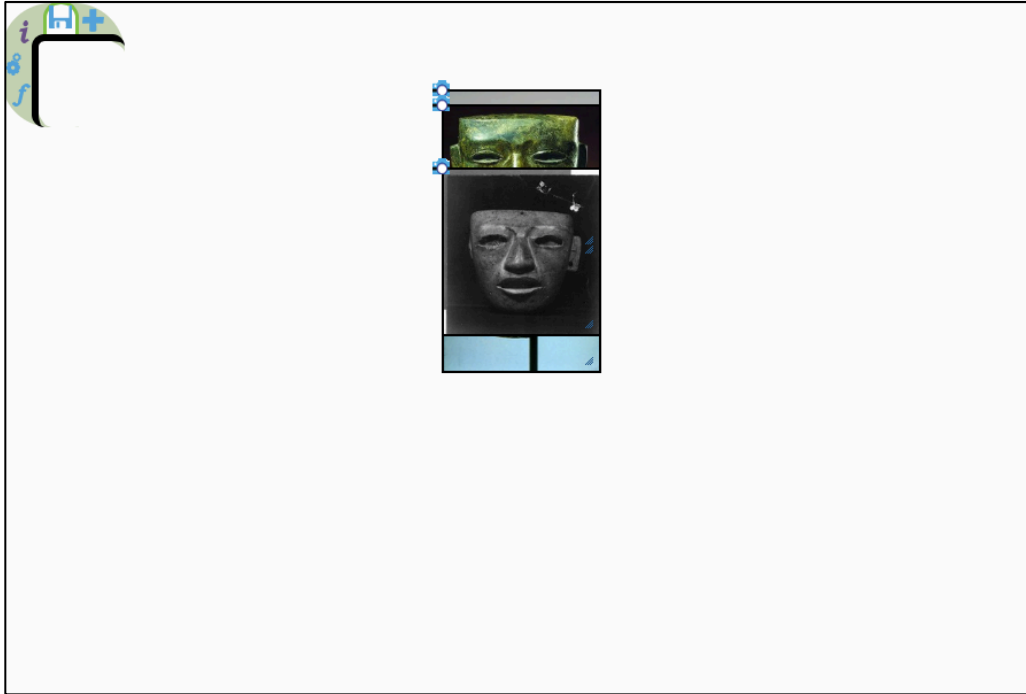
Searching provides fairly predictable results, but also gives you the option of creating a lens contained inside this lens and displayed on the staging area, that allows a text object to be on the screen. This is helpful if you have a categorical distinction in your grouping that you want to respect by keeping a text associated with the group instead of showing a small image of the grouped images.

The search results show the search term highlighted, and give access to other functions in terms of each lens (not shown), such as find related items, search within a folder or lens, or navigate to other places to find the desired object.

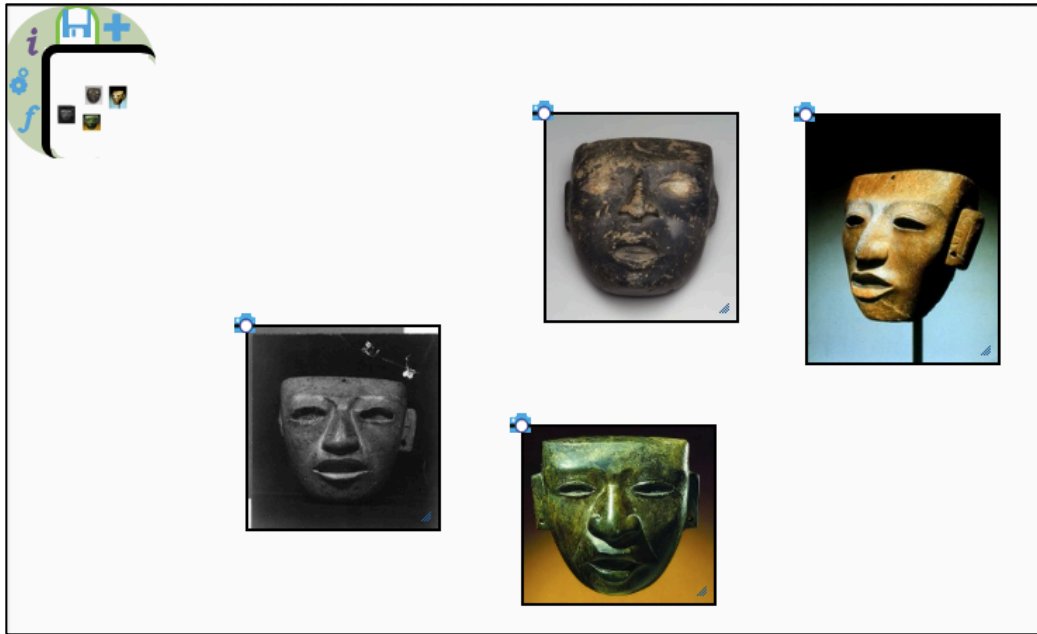


Once the objects are selected, they are placed on the screen, and sized dynamically in accordance with the size of the browser window. User preferences in sizing will

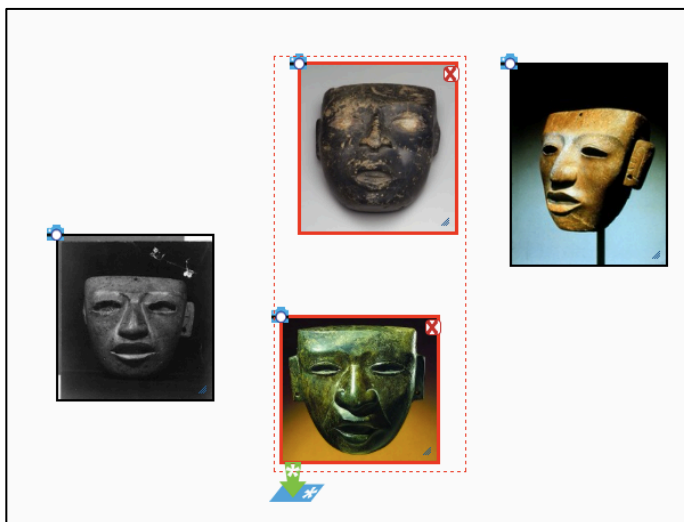
eventually be better integrated, but now only represents a percentage of the available size given how many objects are being added, an average of existing images if adding to an existing image, or a calculation based on the whole lens fitting into the available browser. We here show only the image manipulation tools, but it can also work with audio and video files, pdf documents, web links, and simple text.



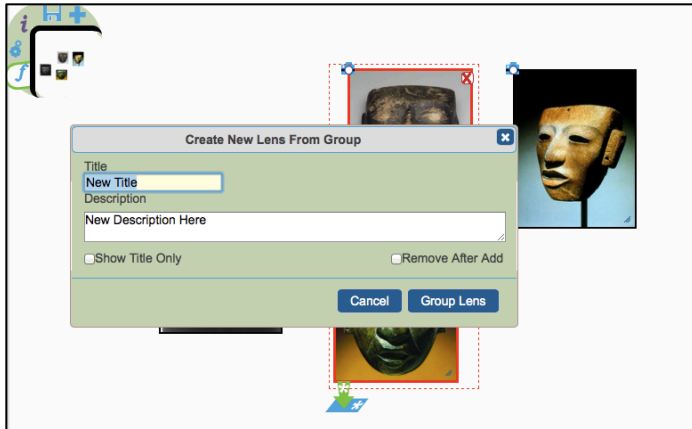
We move the objects into an arrangement and save. A small thumbnail appears inside the controls, which is useful for lenses that exceed the boundaries of the browser window:



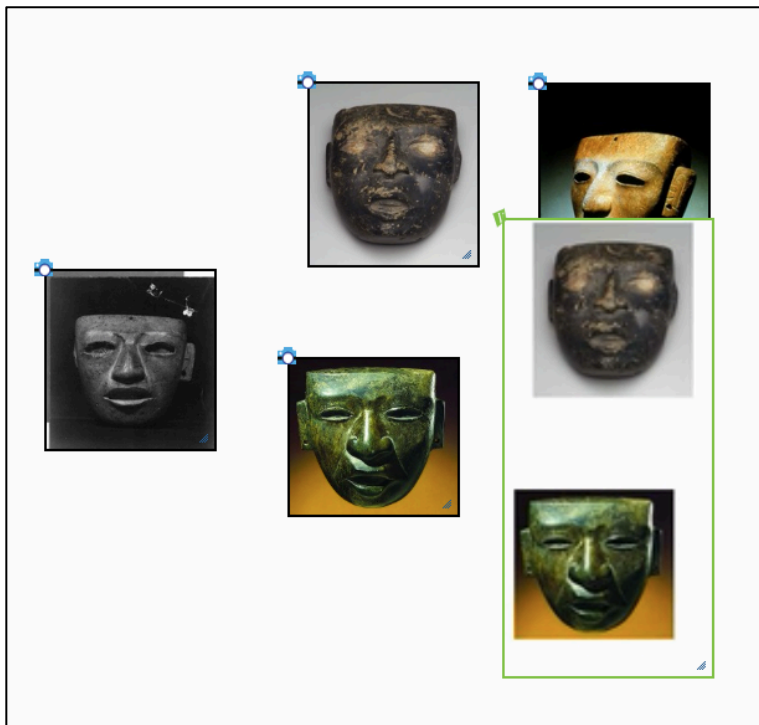
Selecting an object makes more options available, including deleting it from the lens, showing the full-size image, related items, and description, and changing those objects. When two or more are selected, you can move or resize them together.



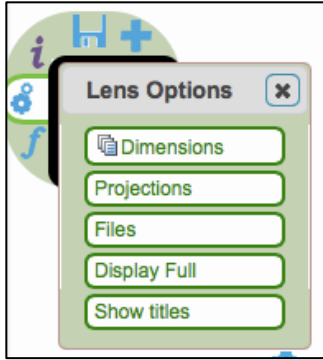
Or you can create a new lens from the group on the screen, and either remove the original items or keep them in the same place. By keeping them in place, you can create multiple sorts from the same original selection. Showing only the title creates a lens that always displays as a text, but which can be used in the same way as other lenses.



You can also select an image, and drop it on a lens that is in the shared staging area of the current lens, adding it to that other lens as well. The lens can be resized and moved, and will update when changed from inside its own staging view.



There are a number of other options we have added that aren't part of the original NEH funded project, but that are important to the overall implementation.







There are tools for having dimensions manipulated – in the sense that you can save information from a sort as on the x or y dimension, then add a new visible dimension while saving the previous sort dimension on the matrix without it being immediately visible to the user. You can also choose different sorts of kernel projection techniques, upload or download csv files. We will not go through these functions, here, but include a screen shot of the spreadsheet page, where the information conveyed visually on the view staging page is available in more traditionally accessible format as a table.

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Example

by admin — last modified Feb 25, 2014 03:55 AM

	Title	UID	Width	Height	Description	Other View	x	y	z	Projection
							Display as X	Display as Y	Display as Z	
	Stone mask.jpg	6bb2539-3ae4-43f5-a0fd-8f06a43	135.0	0.0	Stone mask.jpg	tbd	0.0 (0.000)	0.0 (0.000)	0.0 (0.000)	
	SLAM Deaccessioned Mask.jpg	38d7f70-743d-4adc-8ecc-caa6fct	135.0	143.0	SLAM Deaccessioned Mask.jpg	tbd	-212.0 (-0.194)	149.99 (0.137)	0.0 (0.000)	
	Funerary Mask.jpg	001ca1e-e463-4e29-b2ef-8301a3f	135.0	175.0	Funerary Mask.jpg	tbd	186.0 (0.170)	16.0 (0.015)	0.0 (0.000)	
	Zollman Mask.jpg	36593e1-44fa-4391-b4e1-0ec567c	135.0	125.0	This is new	tbd	-16.0 (-0.015)	212.0 (0.194)	0.0 (0.000)	

Future Directions

We believe Vwire represents a unique opportunity for researchers in visual culture to sort through visual material and create relationships based on visual cues that can be arrayed against other data, be it text-based, numerical, or purely formal. The strength of the tool rests with its breadth, but that also points to a great difficulty. After all, there are very mature technologies, with their own steep learning curves and other start-up costs, that provide some parts of these functions, with stable code and reliable support. We have to show that it's possible to participate in the whole gamut of activities Vwire allows, and that there are significant conceptual advantages to that over other database approaches, before expecting major adoption. However, we firmly believe that art historians and archaeologists, two key groups already engaged in the project, would greatly benefit from a robust circulating version of this tool for many visual research projects. The visual sorting and testing against other data it makes possible would constitute a baseline for the tool, as exemplified in its use as a heuristic tool for presenting visual arguments, but pointing to the ways it could transform all of our thinking about visual experience and how it participates in and sometimes contests linguistic categories. This capacity for staging arguments in terms of associations, visual discernments and easy links to related matter would, it seems, easily and immediately find use in many studies of visual culture.

We will make the tool available for download and self-installation, after final testing, but do not expect many independent users before we have working test cases to show. Simply put, there are difficult start-up costs involved in setting up a Plone installation, with the appropriate modules (such as Numpy), and the average teacher or scholar will not have time to acquire the technical skills necessary to host and style a Plone website with Vwire installed as an add-on. This means that the use of the tool will depend on technically proficient individuals hosting the websites and tools, teaching users both Plone basics and Vwire tools and having institutional commitment to long-term maintenance of the site, so that researchers in visual culture can be assured that their work setting up a database and creating lenses that exploit the capabilities of Vwire will not be abandoned. We have not yet had a fully debugged version of Vwire to use for demonstrations, or been able to show people that we can deliver an appropriately styled and stable website, independent of Vwire, that will be worth their time. If we are successful in the next few months in the development of prototype cases, we can begin to invite people to use our installation and upload their data.

Although we very much welcome independent installations, we plan to target individuals who are domain experts and provide the technical expertise for them in return for the long-term commitment to keeping the data available to them. Broadly speaking, we can be certain of hosting a growing body of data in Mesoamerican cultures, amplified by working with students in courses and working with the Houston Museum of Natural Science, which has a large collection of archaeologically significant art objects. Other areas will depend on the success of these test cases, but we have had extensive discussions with other local museums.

There are also two other directions we are pursuing. One takes the ways in which the surveys were created, and uses that to implement quick and efficient “pile sorts” through the web. These projects are particularly useful for social scientists, and we are working with visual anthropologists and sociologists in health care, and with homeless advocacy. They are also early in development, and cannot be fully deployed until a stable version of the tool is available. However, since the existing tools they use tend to be one-off implementations, as well, we are able to provide equivalent functionality, and have a better user interface.

Finally, the full use of the mathematical tools will, we hope, be what actually enables researchers to use a different paradigm when thinking about multidimensional visual imagery. The sense that discernment is a movement between and of visual experience, and that the traces of those discernments can be analyzed fruitfully using these mathematical tools, means that we can explore an approach to information as fluid and indeterminate, without it being somehow subjective and inaccessible to others. The work has that possibility as its horizon, however, and we cannot claim to have more than a blind groping confidence that continuing in that direction will result in something closer to the objects themselves, and to the worlds from which their forms emerged.

Selected publications and presentations about Vwire:

Price, D., Koontz, R. and Lovings, L., “Curating Digital Spaces, Making Visual Arguments: A Case Study in New Media Presentations of Ancient Objects,” *Digital Humanities Quarterly*, 2013, 7:2.

Price, D., Koontz, R. and Crowder, J. “Vwire,” Workshop Presentation for *The Digital Humanities: A Revolution in Research and Funding*, University of Houston, January 27th, 2012.

Price, D., “Visualizing Emergent Forms: The Philosophical Dimensions of Anthropology and the Mathematics of those Dimensions,” *Visualizing the Technological Disjoint in Communities*, American Anthropological Association Annual Meetings, Montreal, Canada. November 20th, 2011.

Price, D., and Crowder J., “Vwire: Digital Content Management through Spatial Arrangement: A Tool for Visual Argumentation in the Social Sciences and Humanities,” 27th Annual Visual Research Conference, Montreal, Canada. November 16th, 2011.

Price, D., and Koontz, R., “Vwire: Digital Content Management Through Spatial Arrangement,” Visualization in Archaeology International Conference, Southampton University, UK, April 19th, 2011.

